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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/601,247	06/20/2003	Xia Tang	02-641/EH-10787	6688

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SUITE 1201
NEW HAVEN, CT 06510

EXAMINER

ZHENG, LOIS L

ART UNIT	PAPER NUMBER
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1742

MAIL DATE	DELIVERY MODE
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05/03/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/601,247

Applicant(s)

TANG ET AL.

Examiner

Lois Zheng

Art Unit

1742

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 16 March 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 3 and 5-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 3 and 5-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 16 March 2007 has been entered.

Status of Claims

2. Claim 7 is amended in view of the amendment filed 16 March 2007. Claims 1-2 and 4 remain canceled. Therefore, claims 3 and 5-12 are currently under examination.

Claim Objections

3. Claim 12 is objected to due to the following minor informalities:

Claim 12 does not further limit the patent claim 7.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 3 and 5-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bengston et al. US 6,692,583 B2(Bengston) in view of Tomlinson.

Bengston teaches a process of applying a conversion coating composition to magnesium or magnesium alloy(abstract). The conversion coating composition comprises phosphate ions, fluoride ions and vanadate ions(col. 2 lines 19-33).

However, Bengston fails to explicitly teach the addition of claimed organo-phosphonic acid as corrosion inhibitor as recited in instant claim 7.

Tomlinson teaches a conversion coating method for treating aluminum, ferrous and magnesium alloys(abstract, col. 2 lines 17-21). The coating solution comprising fluoride and phosphates(abstract). Tomlinson further teaches the addition of a crystal deformation agent such as nitrilotris(methylene) triphosphonic acid(NTMP) in a preferred amount of 50-200ppm(abstract, col. 5 lines 23-30, claim 24).

Regarding claims 7, 3 and 12, it would have been obvious to one of ordinary skill in the art to have incorporated 50-200ppm nitrilotris(methylene) triphosphonic acid(NTMP) as taught by Tomlinson into the coating solution of Bengston in order to provide a more uniform coating surface texture and to enhance paint adhesion as taught by Tomlinson (col. 5 lines 23-28). Therefore, the NTMP as taught by Bengston in view of Tomlinson reads on the claimed active corrosion inhibitor. In addition, the claimed formation of insoluble salt by the reaction of phosphonic acid and magnesium metal is inherently taking place by the process of Bengston in view of Tomlinson.

In addition, the examiner maintains the rejection for instant claim 7 even with the use of semi-open language "consisting essentially of" since it is well settled that if an applicant contends that additional steps or materials in the prior art are excluded by the recitation of "consisting essentially of," applicant has the burden of showing that the

introduction of additional steps or components would materially change the characteristics of applicant's invention. In re De Lajarte, 337 F.2d 870, 143 USPQ 256 (CCPA 1964). See also Ex parte Hoffman, 12 USPQ2d 1061, 1063-64 (Bd. Pat. App. & Inter. 1989). See MPEP 2111.03 [R-2].

With respect to the amended pH of between 5 and 7, Tomlinson further teaches that pH level can be adjusted by adding acids such as HNO_3 (col. 3 lines 57-60). In addition, the lower pH level associated with higher metal or acid concentration in the coating solution can lead to heavier coating. Therefore, it would have been obvious to one of ordinary skill in the art to have routinely optimized the pH of the coating solution by adjusting the metal or acid concentration in the coating solution to arrive at the claimed pH value of 5-7 depending on the desired coating thickness.

Regarding claims 5 and 9, the NTMP as taught by Bengston in view of Tomlinson is in the amount of 50-200ppm, which read on the claimed 1ppm – 1wt% and 10ppm – 0.5wt% as recited in instant claims 5 and 9.

Regarding claims 6, 10 and 11, Bengston further discloses the phosphate ions come from phosphoric acid in the amount of about 10 – about 200g/l (col. 2 lines 53-61). The fluoride ions are present in the amount of about 0.1 – about 200g/l (col. 3 lines 11-20). Therefore, the phosphate and fluoride ion concentrations of Bengston in view of Tomlinson encompasses the claimed phosphate and fluoride ion concentrations as recited in instant claims 6, 10 and 11. A prima facie case of obviousness exists. See MPEP 2144.05. The selection of claimed phosphate fluoride concentration ranges from disclosed range of Bengston in view of Tomlinson would have been obvious to one

skilled in the art since Bengston in view of Tomlinson teach the same utilities in their disclosed phosphate and fluoride concentration ranges.

Regarding claim 8, the coated magnesium or magnesium alloy substrate of Bengston in view of Tomlinson meets all the claim limitations as claimed.

6. Claims 3 and 5-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsushima in view of Oppen et al US 4,264,378(Oppen), and further in view of Tomlinson.

Matsushima discloses a process for treating aluminum with a coating solution comprising phosphate and fluoride(abstract). The coating solution may also include a polyphosphoric acid(i.e. organo-phosphonic acid,) such as 2-ethylhexyl acid phosphonic acid(i.e. straight or branched alkyl phosphonic acid)(col. 3 line 65 – line 4 line 11) .

However, Matsushima does not teach the claimed vanadate ions in the coating solution and the coating is applied to magnesium or magnesium alloy substrate as recited in amended claim 7.

Oppen teaches a conversion coating composition for phosphatizing aluminum surfaces(abstract, col. 4 lines 1-6). Oppen's coating composition comprising phosphate ions, fluoride ions and vanadate ions(col. 2 lines 42 – 67).

Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated the addition of vanadate ions as taught by Oppen into the coating solution of Matsushima in order to achieve high anti-corrosive protection and good adhesion properties as taught by Oppen(col. 4 lines 16-23).

The teachings Tomlinson are discussed in paragraph 4 above.

Therefore, it would have been obvious to one of ordinary skill in the art to have applied the coating solution of Matsushima in view of Oppen to a magnesium or magnesium alloy since Tomlinson teaches a phosphate, fluoride and organophosphonic acid containing coating solution can be applied to both aluminum and magnesium surfaces(col. 2 lines 17-21).

Regarding claim 7, the instant invention does not distinguish over the teachings of Matsushima in view of Oppen and Tomlinson. In addition, the examiner maintains the rejection for instant claim 7 even with the amended use of semi-open language "consisting essentially of" since it is well settled that if an applicant contends that additional steps or materials in the prior art are excluded by the recitation of "consisting essentially of," applicant has the burden of showing that the introduction of additional steps or components would materially change the characteristics of applicant's invention. In re De Lajarte, 337 F.2d 870, 143 USPQ 256 (CCPA 1964). See also Ex parte Hoffman, 12 USPQ2d 1061, 1063-64 (Bd. Pat. App. & Inter. 1989). See MPEP 2111.03 [R-2].

With respect to the amended pH of between 5 and 7, Matsushima further teaches that the pH of the coating solution is in the range of 1.2-5.5(col. 4 lines 14-16), which overlaps the claimed pH value of 5-7. Therefore, a prima facie case of obviousness exists. See MPEP 2144.05. The selection of claimed pH value range from the disclosed range of Matsushima in view of Oppen and Tomlinson would have been

Art Unit: 1742

obvious to one of ordinary skill in the art since Matsushima in view of Oppen and Tomlinson teach the same coating utilities in their pH value range.

Regarding claim 3, it would have been obvious to one of ordinary skill in the art to have incorporated 50-200ppm nitrilotris(methylene) triphosphonic acid as disclosed by Tomlinson into the coating solution of Matsushima in view of Oppen as the organo-phosphonic acid in order to provide a more uniform coating surface texture and to enhance paint adhesion as taught by Tomlinson(col. 5 lines 23-28)

Regarding claims 5 and 9, the amount range of 50-200ppm of NTMP as disclosed by Matsushima in view of Oppen and Tomlinson reads, the claimed 10ppm to 0.5 wt% of corrosion inhibitor as recited in instant claims 5 and 9.

Regarding claim 6 and 10, Matsushima further teaches that the fluoride concentration should be in the range of 0.1 – 10g/l and the phosphate concentration should be in the range of 0.05 – 50g/l(col. 3 lines 54-64), which substantially overlap the claimed 1-50g/l of phosphate ions and 1-10g/l of fluoride ions. Therefore, the concentrations of phosphate ions and fluoride ions in the coating solution of Matsushima in view of Oppen and Tomlinson meet the limitations of instant claims 6 and 10.

Regarding claim 8, the coated magnesium alloy substrate prepared by the coating method of Matsushima in view of Oppen and Tomlinson would meet all the limitations of instant claim 8.

Regarding claim 11, Matsushima further teaches that the fluoride concentration should be in the range of 0.1 – 10g/l and the phosphate concentration should be in the

Art Unit: 1742

range of 0.05 – 50g/l(col. 3 lines 54-64), which encompass the claimed 10-25g/l of phosphate ions and 3-5g/l of fluoride ions as recited in instant claim 11. Therefore, a prima facie case of obviousness exists. See MPEP 2144.05. The selection of claimed phosphate and fluoride concentration ranges from the disclosed range of Matsushima in view of Oppen and Tomlinson would have been obvious to one of ordinary skill in the art since Matsushima in view of Oppen and Tomlinson teach the same utilities in their phosphate and fluoride concentration ranges.

Response to Arguments

7. Applicant's arguments filed 16 March 2007 have been considered but are not persuasive.

In the remarks, applicant's argument regarding the formation of nitrous acid from cathodic reduction sequence of nitric acid as described in Exhibit I "Behaviors of Metals in Nitric Acid" is not persuasive because this paper has not been filed on record. The examiner is not able to thoroughly evaluate applicant's argument without this document. Therefore, the rejections are maintained.

Applicant's further argument with respect to the amended pH of between 5 and 7 is not persuasive. Applicant is directed to the rejection of the amended pH range as set forth in paragraphs 5-6 above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lois Zheng whose telephone number is (571) 272-1248. The examiner can normally be reached on 8:30am - 5:00pm.

Art Unit: 1742

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LLZ

ROY KING
SUPERVISORY PATENT EXAMINER
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